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Incidence of Cutaneous Leishmaniasis in Hail Government and its Surrounding Villages - KSA

Alageel AH, Aldahailan AA, Almansory AN, Albnayah AA*, Alanzy GA , Alanzy GG and Alshemmary ShA.

Faculty of medicine, Hail University- Saudi Arabia

Abstract

Aim: To explore the incidence of cutaneous leishmaniasis in Hail government. **Methods**: A retrospective study was conducted in Hail governorate and its surrounding villages from 2014 to 2015. Data was based on available records in the dermatology services of King Khalid hospital (KKH) and SPSS was used in data analysis. **Results:** The overall incidence of cutaneous lieshmaniasis was 125 cases during 2014 and 2015 (12.5%), being more in males than females. The incidence rate of CL started to decrease from 88(70.4%)cases in 2014 to about 37 (29.6%) in 2015 year .The highest prevalence was in adults (68%), and it was more in Saudi patients than non-Saudis. According to the residence, Hail City (64%) is more affected for CL than its villages (36%). The present study through light that CL is still an endemic disease in Hail city, but its incidence is fortunately declining. **Conclusion:** cutaneous leishmaniasis is still considered an endemic disease in Hail, Saudi Arabia even though its incidence is declining.

Keywords: *Incidence, cutaneous leishmaniasis, Hail, Saudi Arabia*

**Corresponding Email: a-alb22@hotmail.com*

1. Introduction

Cutaneous Leishmaniasis (CL) consists of a complex of vector-borne diseases caused by a heterogeneous group of protozoa belonging to the genus *Leishmania* .It is transmitted by sand-fly vectors and causing an ulcer [1]. Globally, there are an estimated 1·5–2 million new cases and 70 000 deaths each year, and 350 million people are at risk of infection and disease [2], and approximately one third of these cases occur in the three epidemiological regions of CL which are America, Mediterranean basin, and western Asia. Kingdom of Saudi Arabia is classified as the fourth most endemic focus of CL in the middle East to Central Asia region with an estimated annual incidence ranging from 9 600 to 15.8 cases per year [3].

1.1. Epidemiology

Several features characteristics of CL epidemiology. In established endemic areas, CL prevalence typically increases with age up to 15 years, after which prevalence levels off , presumably because of the acquisition of immunity. The infection can cluster within households, which is indicative of the short flight range of sandflies [4], anthroponotic transmission, or genetic susceptibility [5]. Risk factors of disease commonly include sex (eg, sex bias usually points to behavioral patterns that increase vector exposure), age, household design and construction material, and presence of domestic animals [6-8].

Morsy and Shoura reported the first CL case in KSA in 1973 [9]. According to the Ministry Of Heath statistical reports, 2002-2014, the top five cities that have endemic CL are Al Qaseem,

Al Madinah Al Munawarrah, Riyadh, Al Hassa and Asser. Hail city and its provinces follow them at the sixth place of having this disease; the average reported incidence of CL in Hail is 183 case/year [10-15], thereby, our present retrospective study aimed at describing the incidence of CL in Hail city and its provinces over a two - year period (2014-2015).

1.2. Clinical Manifestations

Several Leishmania spp can cause cutaneous leishmaniasis in human beings, although most infections probably remain symptomless. The first sign of an infection is typically a small erythema that develops after a variable prepatent period at the site where an infected sand-fly has bitten the host. The erythema develops into a papule, then a nodule that progressively ulcerates over a period of 2 weeks to 6 months to become the lesion that is characteristic of LCL. LCL lesions vary in severity (eg, lesion size), clinical appearance (eg, classic LCL vs disseminated leishmaniasis vs leishmaniasis recidivans), and time to (spontaneous) cure as shown in Figure 1 [16].

Figure 1: Clinical spectrum of the cutaneous leishmaniases

The disease encompasses a range of clinical symptoms, including large ulcers (A: lesion caused by L tropica in Kabul, Afghanistan), destruction of the mucosae (B: mucosal leishmaniasis caused by L braziliensis in Cochabamba, Bolivia), and various secondary diseases (C: leishmaniasis recidivans caused by L tropica in Kabul, Afghanistan). Most lesions are on areas exposed to the sand-fly vectors (ie, face, hands, and feet). Clinical diagnosis can be difficult because of other causes leading to similar pathologies or home-based remedies that change the clinical picture typical of leishmaniasis (D: lesion treated with battery acid, Peru).

1.3. Diagnosis and Management

The diagnosis of CL depends on the demonstration of the parasite in smears or skin biopsy specimens by direct microscopic examination. These classic methods lack a high sensitivity and specificity and do not provide any clues regarding the species involved in the pathogenesis of the disease [17]. Recent studies have shown that the polymerase chain reaction (PCR) provides a much faster diagnosis of CL in clinical cases [18-21]. Although non-fatal, CL is treated to accelerate cure to reduce scarring, especially in cosmetic sites, and to prevent parasite dissemination (ie, mucosal leishmaniasis) or relapse. Treatment is commonly given for persistent (>6 months duration), multiple, or large lesions, and for lesions located on joints or on the face [22]. WHO recommends treating CL with pentavalent antimonial drugs (ie, sodium stibogluconate or meglumine antimonate) at 20 mg/kg per day for 20–28 consecutive days. Barring one exception,123 this regimen has been shown to be more efficient than a daily dose of 10 mg/kg, 13 mg/kg, or 15 mg/kg in treating CL [23,24].

2. Material and methods

2.1. Study Design
A retrospective study.

2.2. Study Setting
Hail is one of the 20 Saudi provinces. It is located in northwestern KSA. It has a continental desert climate with hot summers (average high temperature 29.2 Celsius) and cool winters (average low temperature 13.3 Celsius). Hail is located in a higher altitude with an annual precipitation of 100.6 mm. According to the Ministry of the Interior (2013), Hail has a population of 527 000 persons [15].

2.4. Data collection and analysis
Data was based on the available records in the dermatology services of King Khalid hospital (KKH) over 2014 to 2015, basic data including the number, age, the gender and the nationality (Saudi or Non Saudi) of the patient, the precise date of consultation and the patient's residence (at the level of the first administrative unit) were collected for all the patients, and SPSS version 21 was used for data entry and analysis.

2.4.1. Ethical consideration
Permission was obtained from the faculty of medicine through the dean of medicine before the beginning of the study.

3. Results

3.1. Incidence of CL
Out of one thousand patients, attended King Khalid hospital of Hail city over two years; 2014 and 2015, 125 cases were diagnosed as CL (12.5%) . The yearly number of reported CL cases ranged from 88 to 37, with a mean of reported cases per- 2years of about 62.5 patients. Nevertheless, this demonstrated that the incidence rate of CL started to decrease from 88 cases in 2014 to about 37 in 2015 year as shown in (Table 1).

Table 1: Age distribution of CL cases in Hail City and its village in 2014 & 2015 Years.

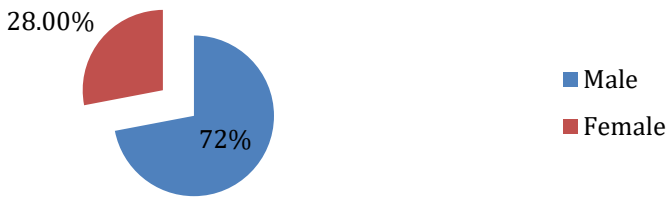
Total cases	Total +ve case in 2014	88	70.4%
1000	Total +ve case in 2015	37	29.60%
	Total +ve Cases in 2014 - 2015	125	12.5%

.3.2. Age and Sex distribution
The age of patients was ranged from 3 month to 58 years old, the majority of cases (68%) occurred in the adults. However, numbers of CL cases markedly decline in the other age groups, the lowest rate was found in infant patients (4.8 %) as shown in (Table 1). Regarding to sex, there were 90 males and 35 females of the total *CL* cases reported. As represented in Fig.2, the numbers of cases CL in males (72%) was higher than females (28%) during the period 2014 and 2015 in both Saudi and non-Saudi patients from Hail.

Table 2: The number & percentage of positive CL cases in both hail city and village during the last two years; 2014 & 2015 .

	Infant < 1-2 Y	children 3-12 Y	adult 13-40	Old age =\>40 Y
Numbers of cases	6	19	85	15
Percent	4.8%	15.2%	68%	12%

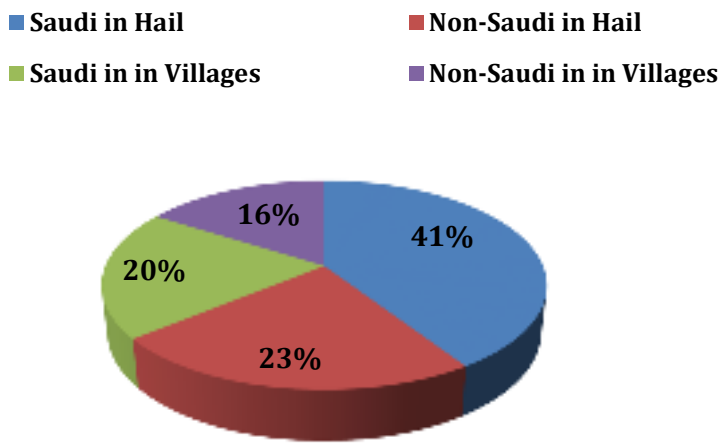
Figure 2: Sex distribution of CL cases



3.3. Distribution of CL cases according to their nationalities

The numbers of cases in Saudi (41%) was higher than expatriates (23%) in hail city over two years; 2014 and 2015. (Fig.3). In Villages about 20 % of the total notified cases were reported Saudis which was higher than non-Saudis patients (16%). (Fig.3)

Figure 3: Nationality Distribution in hail



3.4. Residence and geographical distribution of cases

According to the residence, Hail City (64%) was more affected for CL than Villages (36%) as shown in Figure.3. In Hail city ,the highest incidence is 7.2 % (n=9 cases) in cases lived in Al- jabal district, while the least percent of affected cases (0.8%) was in many districts as Alresaf , Marwag , Aja , Matar and others as shown in Table 3. Whereas, 36 % were from villages, mainly in Shenan (5.6%; n=7 cases). For the others villages, only few sporadic cases were reported as shown in Table 4.

Table 3: Distribution of the reported CL cases in Hail city during 2014 & 2015 according to the geographical origin.

Regions in Hail City	Number cases	Percent
Alazizyah	5	54
Alkhyzama	6	4.8
Alrasef	1	0.7
Samra	4	3.2
Marwaj	1	0.7
Khamashiyah	5	4
Samera	3	2.4
Sadyan	5	4
Aljabal	9	7.2
Alworood	1	0.7
Sharaf	6	4.8
Salah aldeen	2	1.6
Meshar	1	0.7
Maseef	2	1.6
Sharq Mojama	2	1.6
Alsayiq	1	0.7
Swiflah	3	2.4
Synaieyah	1	0.7
Mashaan	1	0.7
Badyah	1	0.7
Salah aldeen	2	1.6
Telephesion	1	0.7
Aja	1	0.7
Waseata	2	1.3
Nafel	3	2.4
Matar	1	0.6
Woday	3	2.4
Jamieen	1	0.8
Total	74	% 100

Table 4: Distribution of the reported CL cases in Hail villages during 2014 and 2015 according to the geographical origin.

Regions in Hail Villages	Number of cases	Percent
Johfah	2	1.6
Khotah	2	1.6
Joobah	1	0.8
Shinan	7	5.6
Shaqiq	2	1.6
Qaser Ashrawat	1	0.8
Qafar	5	4
Mreafaq	3	2.4
Hayid	1	0.8
tabah	2	1.6
Qarya albeer	1	0.8
Shbealy	1	0.8
Qinaa	1	0.8
Shamly	2	1.6
Mshityah	2	1.6
Aesh	1	0.8
Areaja	2	1.6
Neqrah	2	1.6
Om qalban	1	0.8
Qaryah Mesmar	1	0.8
Hafeer	1	0.8
Adwah	1	0.8
Total	42	%100

4. Discussion

In the present study the CL ulcer was diagnosed as single or multiple painless ulcer occur on exposed areas, with a characteristic erythematous raised border with an overlying crust and leaving a disfiguring scar. The same description was also reported by many authors [25,26,27].

In the current study, out of one thousand patients, attended King Khaled hospital of Hail city over two years; 2014 and 2015, 125 cases were diagnosed as CL (12.5%). The annual reported CL cases ranged from 88 to 37, with a mean of reported cases per- 2years of about 62.5 patients. Nevertheless, this demonstrated that the incidence rate of CL started to decrease from 88 cases in 2014 to about 37 in 2015 year. This accords with study conducted by Zakai (2014) in Hail found the prevalence in Hail and other cities was declining. Zakai found also that the highest incidence was in Al Quassim city, KSA., and the lowest incidence was in Al Jouf [28]. The decreasing incidence attributed to increase health awareness of the population, increase health education of medical team in these cities, increased governmental health care and support, treatment of cases and the use of insecticides and repellants that avoid the occurrence of new infections.

The total *Cutaneous Lieshmaniasis* cases, in the present study, reported during 2014 and 2015 was 125 including 90 males and 35 females. As represented in Fig.2, the numbers of cases CL in males (72%) is higher than females (28%) in both Saudi and non-Saudi patients from Hail. Nearly the same result was found by Shalaby et al [14] and MOHSA [15]. The explanation of higher male incidence than females was due to the more exposure of males to infection than

females. The cause is the outing or camping habits to desert for hunting, entertainment. Also, the females are completely covered as a religion order.
In the current study, the age of patients ranged from 3 month to 58 years old .The majority (68%) of cases occurred in the adult. Numbers of CL cases markedly declined in the other age groups, the lowest rate was found in infant patients (4.8 %). Similarly, Shalaby et al [14] reported the adults were the most age group that caught CL in Kaseem city. Nearly similar percentage was reported by El-Beshbishy et al [12] in Al Madina Al Monawara. The outing, camping, work and more life activities explain the present result.

In the current study, the numbers of cases in Saudi (41%) was higher than expatriates (23%) in hail city over two years; 2014 and 2015. In Villages about 20 % of the total notified cases were reported Saudis which was higher than non-Saudis patients (16%). The Saudi traditional and cultural habits of desert outing, camping may be the cause.

5. Conclusion

In conclusion, CL is still considered an endemic disease in Hail, Saudi Arabia even though its incidence is declining. The decreasing incidence attributed to increase health awareness of the population, increase health education of medical team in these cities, increased governmental health care and support, treatment of cases and the use of insecticides and repellants that avoid the occurrence of new infections Therefore, more studies are required to reevaluate its epidemiology in the government and more effort should be made to control the disease and reduce its prevalence. Furthermore, strict guidelines for prevention should be followed. Updating of the treatment of CL and the drugs used in Hail and also health education should be obligatory applied.

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